ENGINEERING NEWS-RECORD

Shasta concrete rises as 6,000-yd. daily placement rate is approached—*see page 2*

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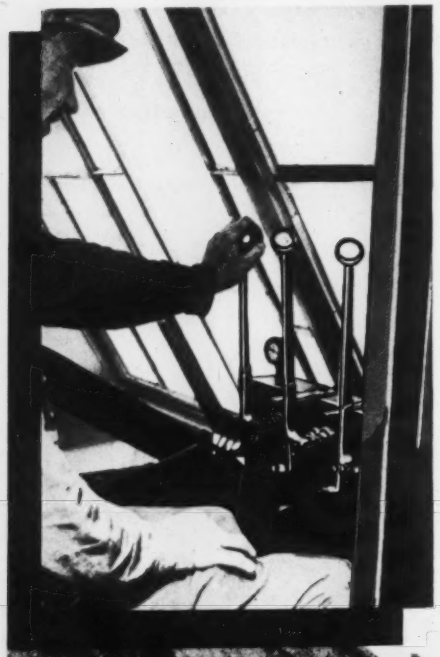

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The Week In Engineering and Construction

ENGINEERING NEWS-RECORD • OCTOBER 31, 1940

Procedure clarified for water conservation projects

President signs bill co-ordinating Bureau of Reclamation and Department of Agriculture programs, placing $2,500,000 limit on projects using WPA and CCC

Procedures by which water conservation projects in the arid Great Plains may be carried out are made consistent and explicit by a bill which the President has now signed. Under 1937 legislation the Department of Agriculture was empowered to carry out non-reimbursable water projects in the arid areas. The intention was that the projects be wells, stock-ponds and the like. This intention has been followed in general, but the law drew no clear distinction between this type of project and the type carried out by the Bureau of Reclamation.

Two years later the Wheeler-Case Act empowered the Bureau of Reclamation to carry out partly reimbursable projects using some WPA and CCC funds which would not have to be repaid by water users. No detailed procedures were given.

Cost limits imposed

The new law coordinates the two programs by limiting the size of agriculture projects to $50,000. As to Wheeler-Case projects, the measure provides that the same administrative procedures be followed in expending reimbursable funds as used on regular reclamation projects. A new feature of the agriculture projects, is that the Department of Agriculture may now buy up dry land, before the project is built, improve the land and resell it to Dust Bowl refugees for repayment over a period as long as fifty years. Wheeler-Case projects may now

Acme Photo

Helping the Governor put Boston's pressure aqueduct into service

In the presence of many distinguished guests, the new pressure aqueduct of the Boston Metropolitan District Water Supply Commission extending from Southboro to Weston was opened by Governor Saltonstall of Massachusetts on Oct. 23. About 18 miles of the aqueduct has now been completed, or sufficient to bring Quabbin and Wachusett water from the end of the Wachusett aqueduct to the Norumbega Reservoir—a new high level distribution basin in Weston connecting with the district's present supply mains. Authorized expenditure for the new supply, including $7,150,000 from the PWA, is about $72,150,000 in addition to the $900,000 Southern Sudbury emergency supply. The new aqueduct substantially parallels three existing grade line aqueducts from the old Cochituate and Sudbury supplies. It will deliver water to the district's supply mains under about 72 ft. greater head than is now available since it has been constructed as a pressure line to operate under a head varying from 20 to 220 ft.

The next step in the district's construction program is completion of the pressure tunnel being built from the Charles River shaft, at the easterly terminus of the pressure aqueduct, to Chestnut Hill, where connections will be made with the Southern high service mains to eliminate all of the Chestnut Hill pumping and reduce the cost of maintenance. The ultimate development of the system will include a deep pressure tunnel loop around the entire district to eliminate the Northern high service pumping at Spot Pond.

Shown above opening the valve in the gate house at Norumbega Reservoir are, left to right: S. M. Dore, assistant chief engineer; T. D. Lavelle, associate commissioner; Governor Saltonstall; Karl R. Kennison, chief engineer; R. E. Harrison, resident engineer; C. C. McCully, division engineer; and Eugene C. Hultman, chairman, Metropolitan District Water Supply Commission.

include provision for power and water supply features.

A cost limit is imposed on the projects by the new measure. The reimbursable portion of the dam and reservoir cost may not exceed $1,000,000 chargeable to irrigation and $500,000 chargeable to water supply and power. No limit is imposed on distribution systems but these would ordinarily not exceed the cost of the irrigation reservoir. Thus the largest Wheeler-Case project would involve a total cost, exclusive of labor, of about $2,500,000, with labor furnished by WPA or CCC.

Consultants to recommend sewage disposal for camps

A contract for engineering service and recommendations on sewage treatment works for 25 army camps has been made with the consulting engineering firms of Metcalf & Eddy and Greeley and Hansen.

These engineers are soon to prepare a report and make recommendations on the most appropriate methods of sewage treatment for all conditions which may be encountered on these projects. Conference is to be had with representatives of the Constructing Quartermaster in Washington on general sewage treatment problems. Projects are as follows:

Fort Belvoir	Fort Belvoir, Va.
Camp Blanding	Starke, Fla.
Fort Bliss	El Paso, Tex.
Fort Bragg	Fayetteville, N. C.
Camp Brownwood	Brownwood, Tex.
Fort Devens	Ayer, Mass.
Camp Edwards	Falmouth, Mass.
Camp Hulen	Palacios, Tex.
Indiantown Gap	Lickdale, Pa.
Kisatchie Natl. Forest Camp Area No. 6	Alexandria, La.
Kisatchie Natl. Forest Camp Area No. 18	Alexandria, La.
Camp McClellan	Anniston, Ala.
March Field, AA Firing Center	San Jacinto, Calif.
Fort George G. Meade	Fort George G. Meade, Md.
Camp Merriam	San Luis Obispo, Calif.
Camp Peay	Tullahoma, Tenn.
Pine Camp	Watertown, N. Y.
Fort Riley	Fort Riley, Kansas
Camp Joseph T. Robinson	Little Rock, Ark.
Camp Savannah (AA Firing Center)	Hinesville, Ga.
Camp Shelby	Hattiesburg, Miss.
VII C. A. Training Center	Leon, Iowa
Tallahassee Airport	Tallahassee, Fla.
West Palm Beach Airport	West Palm Beach, Fla.

Bureau of Reclamation Photo

Six million yards to go

With only about 200,000 yd. in place, the design placement rate of about 6,000 cu.yd. per day is soon expected for Shasta Dam work where 6,000,000 cu.yd. of concrete will be required for the second largest and the second highest concrete dam in the world. The huge chunk of concrete shown above wedged into the base of the east abutment comprises about one-thirtieth of the ultimate concrete mass required.

Shasta Dam, which is being built in northern California on the Sacramento River by the Bureau of Reclamation as part of the Central Valley project, is for flood control and power and is to cost $80,000,000. The first concrete for the structure, which is to be exceeded in size only by Boulder Dam, was placed July 8 using a unique multiple cableway system radiating from a 460-ft. head tower on the west abutment.

Pacific Constructors, Inc., is the general contractor for the work, Frank T. Crowe, superintendent. For the Bureau of Reclamation Ralph Lowry is construction engineer for the Shasta Division, and Grant Bloodgood is in charge at the dam.

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Money approved for new Wilmington water supply

Expenditure of $1,000,000 to provide a new water supply for the city of Wilmington, N. C. was approved by commissioners of that city Oct. 25. The approval followed the demand for action on the part of the Wilmington citizens for a new supply.

Wilmington, which has a population of over 30,000, has been without fresh water for about a month (*ENR*, Oct. 17, 1940, p. 509) due to the prolonged drought and unusually seasonal high tides backing salt water into the Toomer's Creek reservoir.

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Pennsylvania road official must go to jail

The Dauphin County, Pa., Court, Oct. 21, refused to stay execution of a one-year jail sentence and a $3,000 fine imposed upon former Pennsylvania secretary of highways, Roy W. Brownmiller, after both the state superior and supreme courts refused to review the case. Brownmiller was directed to surrender not later than Oct. 28 at the Dauphin County prison to start serving his sentence.

The former state official was convicted of misfeasance and malfeasance in an alleged $600,000 highway payroll padding in Luzerne County prior to the 1938 primary elections.

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Draftsmen not exempt from wage-hour act

Most draftsmen, even those earning more than $200 per month, are still subject to the Wage-hour law under the new definitions of exempted groups (*ENR* Oct. 17, p. 504), Administrator Fleming states. In a letter to Secretary B. O. Lumm of the Seattle local of AFL's International Federation of Technical Engineers, Architects, and Draftsmen's Unions, Fleming pointed out that draftsmen are normally paid on an hourly basis, work in groups, and do routine work. Thus "in the vast majority of instances" they will still retain the benefits of the act.

Fleming contended that few draftsmen now covered will be exempt under the new definition of a professional, but said that introduction of the salary qualification for the first time brings under the act "members of the learned professions, such as chemists and engineers, who in some instances have been grossly exploited by their employers by the requirement of long hours at low wages."

• • •

Chicago will double size of Southwest plant

The Sanitary District of Chicago will expand facilities at the 400-mgd Southwest disposal works—already the world's largest complete treatment works—to handle an additional load of 500 mgd. The first contract, a half million dollar order for air blowers, has been awarded to the Allis-Chalmers Mfg. Co.

The new work, which will total about $800,000, will be divided into two stages. The first, adding 100 mgd capacity to the existing plant through the addition of final settling tank and blower facilities, will cost $3,880,000. The second-stage addition of 400 mgd will include construction of primary and final settling tanks, aeration tanks, and extensions to present pumping, blower and sludge disposal facilities.

The enlargement program at the Southwest plant, a complete description of which is scheduled for an early issue of *ENR*, is the culmination of plans made some fifteen years ago to give complete treatment to all the sewage from Chicago and 60 suburban towns and cities.

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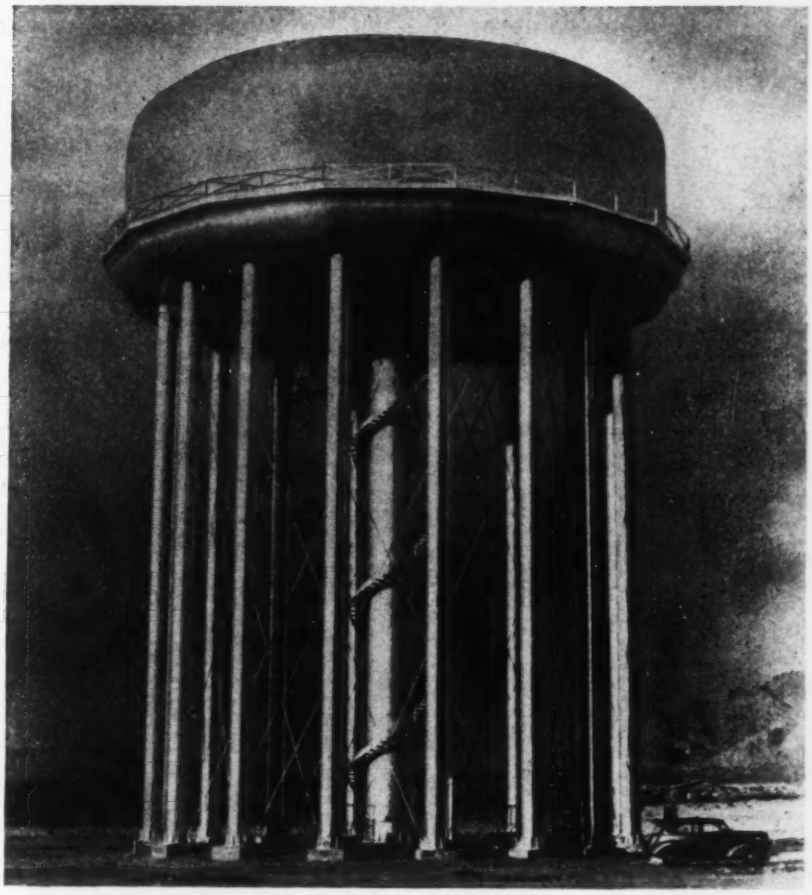
Bids asked Nov. 18 for Kanopolis Dam

Proposals will be received on Nov. 18 by the U. S. District Engineer, Kansas City District, Davidson Bldg., Kansas City, Mo., for the construction of the main embankment and spillway of Kanopolis Dam on the Smoky Hill River near Salina, Kansas. The dam, of rolled-fill earth, will be 15,000 ft. long and 140 ft. in maximum height. Principal quantities are: excavation, 19,600,000 cu.yd.; fill, 14,400,000 cu.yd.; rock and gravel facing, 226,000 cu.yd.; rock and sand gutters, 23,000 lin.ft.; pipe drains, 5,150 ft.; and top soil excavation, 95,000 cu.yd. No concrete is called for.

Scheduled completion date is June, 1940. Prosecution of the work during the winter periods, Dec. 1 to March 1, is optional with the contractor. Plans and specifications are on file at all U. S. Engineer division offices and the Kansas City, Omaha, St. Paul, Chicago, Pittsburgh and Tulsa district offices.

Construction of the river diversion and outlet works is now under way by the Morrison-Knudsen Co. Major A. M. Neilson is district engineer at Kansas City.



An oasis in the Arizona desert

Latest addition to the big water storage tanks in the United States is this 1,000,000-gal. structure built for Tucson, Ariz. by the Allison Steel Mfg. Co. of Phoenix, Ariz. The distance from the ground to the tank's bottom is 85 ft. with the water level 25 ft. above that and the top of the dome another 7 ft. to make the total height 117 ft. Inside diameter of the tank, which has a flat bottom, is 80 ft. (See ENR Nov. 23, 1939, p. 701, for a comparison with other large capacity tanks). The bottom is 3/8-in. plate butt welded. All courses of the tank walls are lap welded with the first 7/16-in. plate, the second 3/8-in., the third 5/16-in., and the fourth 1/4-in. The dome is of 3/16-in. plate and the encasement around the walkway of 10-gauge.

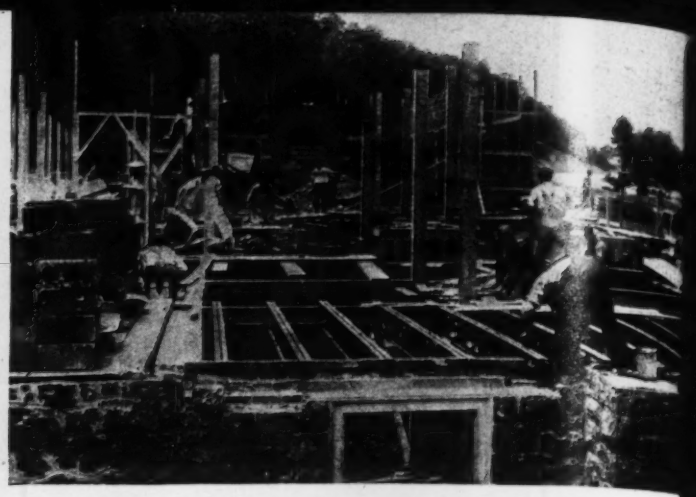
The standpipe is 8 ft. in diameter and of 1/2-in. plate butt welded in straight and circumferential seams. The 85-ft. member was fabricated in the shop by welding and then transported by flat car to Tucson. The sixteen supporting columns, each 36 in. in diameter, 5/16 in. thick, were also shop fabricated and transported by flat car. They are also 85 ft. in length.

Bay State plans 6-year public works program

A $55,000,000 program for public works to cover six years' activity is to be presented to the next legislature by the Massachusetts Department of Public Works, according to an announcement by Commissioner John W. Beal last week at the annual dinner of the Massachusetts State Engineers' Association. While details will await presentation to the lawmakers, who will assemble at Boston, it was pointed out that the program will include railroads, waterways and highways under a plan for co-ordinated development. In the next two years $10,000,000 will be spent.

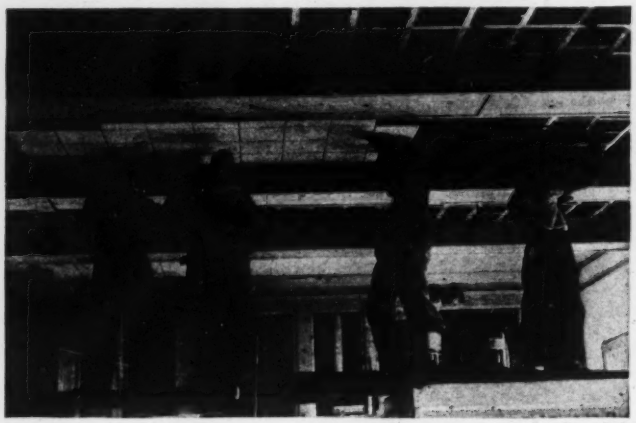
Austin Co. photo

CONCRETE FOUNDATION walls for the Midway Station near Bedford



Austin

STEEL BAR JOISTS support the first floor of the main building. Cinder blocks are used for interior partitions, and native blue limestone for exterior walls



Austin Co. photo

DINING HALL has knotty-pine beams and an acoustic ceiling. Sound absorbing material is shown being cemented to the furring with mastic

Austin Co. photo

CULVERT TYPE 400-ft. pedestrian underpass connects opposite roadway with Midway Station

STORAGE TANKS for various fuels are set below the ground at all stations, this one being the intermediate station at Blue Mountain

AT MIDWAY STATION the main building houses a restaurant with accommodations for 120 and a truckers dormitory for 38.

Service stations on the Pennsylvania Turnpike

ALONG the 160-mile route of the Pennsylvania Turnpike the Standard Oil Co. of Pennsylvania has completed specially designed service stations to serve patrons of the superhighway. The stations are located at convenient points about 15 mi. apart and alternate as to the side of the roadway. Thus, service is available only every 30 mi., as no provision is made for crossing the highway. There are 10 stations in all.

All buildings are of early Pennsylvania architecture using native blue limestone to achieve harmony with the area. Near Bedford, about the midpoint of the turnpike, an elaborate two-story building has provisions for a restaurant seating 120, a truckers dormitory to accommodate 38 men, and recreation facilities. Opposite this "Midway Station" and connected by a 400-ft. culvert type underpass, is a small station to serve cars on the opposite roadway.

The Standard Oil Co. of Pennsylvania, outbidding the Sun, Gulf and Atlantic companies, holds the franchise for exclusive services on the Turnpike. The Pennsylvania Turnpike Commission will receive two cents for every gallon of gas sold during the next 30 years, a sum expected to total $4,000,000 based on the anticipated sales of 5,000,000 gallons annually. At all stations diesel fuel will be sold and a lubrication bay is provided.

The smaller stations are single-story buildings with lunch room and toilet facilities provided. Station roadways are of asphalt with concrete curbs. To avoid interruption of traffic on the superhighway, all stations have long decelerating and accelerating lanes.

All these stations were designed and constructed by the Austin Co. of Cleveland at a cost of about $500,000. T. G. Gustafson, field superintendent, and Alwyn Oppy, engineer, represented the Austin Co. and Harry Beamer and Charles D. Kelly the owners.

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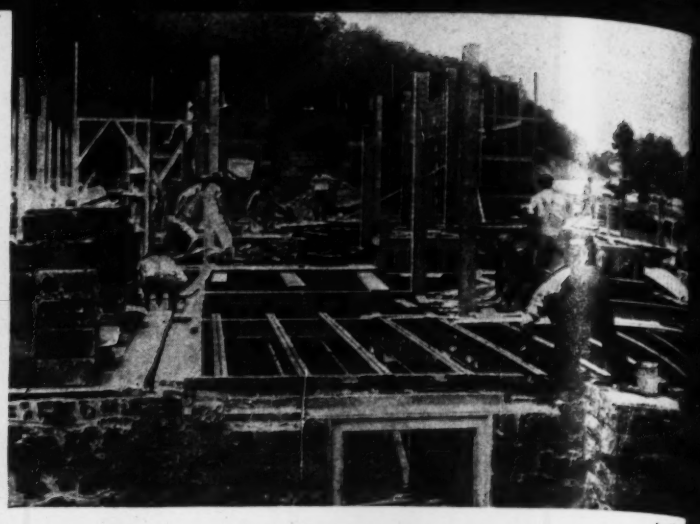

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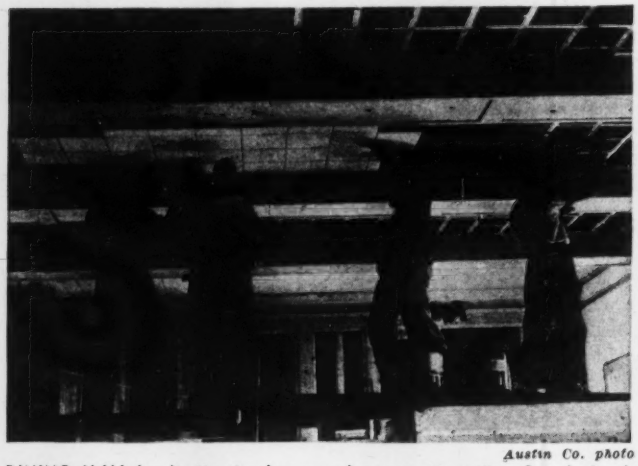

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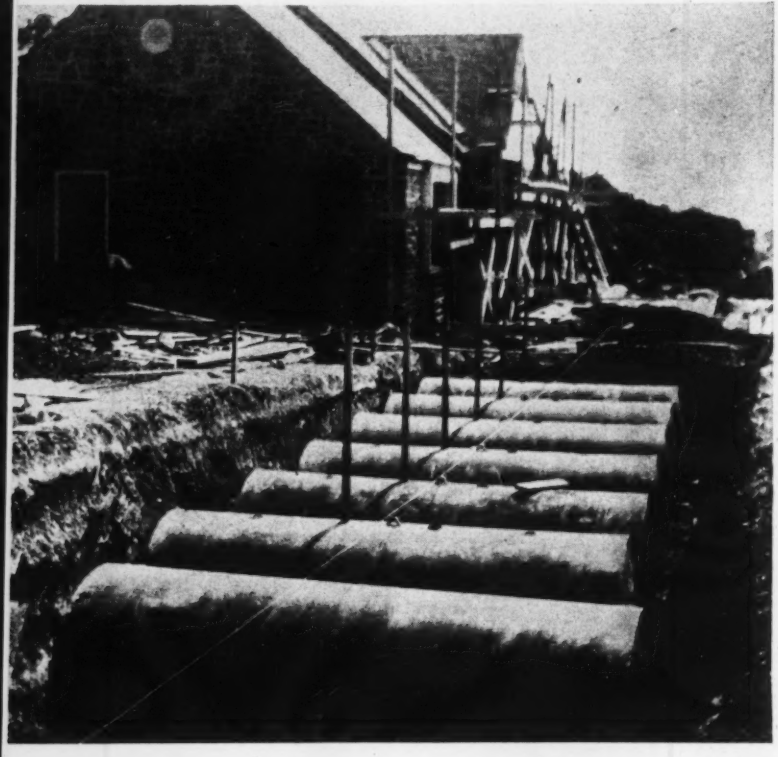

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Structural welding has prominent place on convention program

Cleveland meeting of American Welding Society reports on progress of research and field practices

The twenty-first annual meeting of the American Welding Society, held at Cleveland, Oct. 20–25, with a record registration of over 1,800 and unusually intense interest in technical sessions and committee meetings, fittingly marked the close of an administrative year in which all records were broken for increase in membership (now almost 4,400), and for technical reports and activities, volume of research work and local section activities. The meeting was concurrent with the National Metal Congress and Exposition. Of some 275 exhibits from the metal industries, 44 were devoted exclusively to welding and allied processes.

Of growing importance is the continually increased cooperation of federal government bureaus in both technical activities of the society and support of its research. Although Col. G. F. Jenks, Army Ordnance Dept., merited the new presidency because of long and outstanding service to the society, his appreciation of matters related to coordination of industry with national defense makes his election particularly timely. He succeeds George T. Horton of the Chicago Bridge and Iron Co. K. L. Hansen of Milwaukee succeeds Col. Jenks as first vice-president. A void that will be hard to fill is left in the ranks of the society by the recent death of Charles A. McCune, veteran treasurer and a founder of the society.

Technical sessions

Of the 53 papers presented in the technical sessions a number are of interest to the engineering construction industry. One of these described some of the many welded rigid-frame buildings constructed by the Bureau of Yards and Docks of the Navy Department during the last two years and discussed the various types of framing, conditions of loading, details of design and construction and the advantages of this type of construction.

The technical session on structural welding was one of those drawing the largest attendance and involving the most enthusiastic interest and discussion. Speakers were Fred L. Plummer, Hammond Iron Works; Bruce Johnston, Lehigh University; La Motte Grover, Air Reduction Sales Co.; and F. H. Dill, American Bridge Co. Papers on the design and construction of welded bridges and buildings emphasized proper detailing of welded connections for economy as well as consistency with the known behavior of structural steel and weld metal under various stress conditions.

Examples of recent European practices in welded bridge construction were cited, along with a description of the all-welded portion of Cleveland's new Main Avenue Bridge.

This session also included a report of recent tests made at Lehigh University on flexible welded beam-to-column connections, as well as an excellent practical discussion of flame cleaning of structural steel to prepare the surface for painting. Comparative tests showed acetylene to be the most efficient fuel gas for this process.

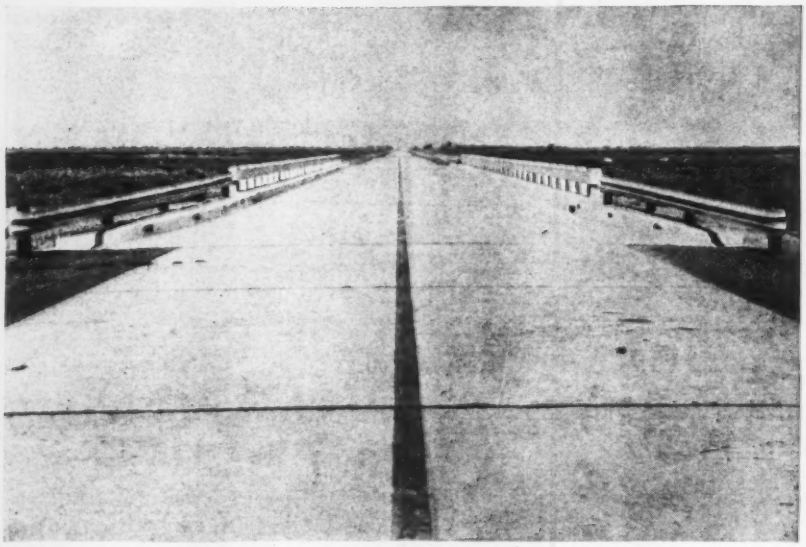
Committee reports

The revised edition of the welded bridge specifications, now virtually completed, will be published soon. Drafts for the various sections of the new code for welding in building construction have reached an advanced stage.

The sub-committee on fatigue testing (structural) of the Welding Research Committee has completed its rest versus no-rest investigations, finding no effect of rest periods within ranges of service conditions pertaining to bridges. A study of fatigue strength of butt welded joints in 5x⅞-in. specimens has been completed and the work is now directed toward evaluating such welds when made under service conditions. Results from the first series of tests showed a much better efficiency for properly made butt welds than for riveted joints under repeated stress, with 100 per cent efficiency realized for welded joints ground smooth and flush to remove all surface irregularities.

A recent series of fatigue tests of filet-welded connections has demonstrated that low test results of a previous program were largely the result of an unwarrented avoidance of transverse welds, which resulted in poor stress distribution and high stress concentrations at the ends of longitudinal fillets when used alone. A further series of tests is designed to ascertain the most favorable grouping of filet welds in end connections.

Fundamental data has been developed



Texas paves 40 miles of new highway for $771,000

Reducing the distance between Houston and San Antonio by about 12 miles and paved at a cost of about $771,000 (exclusive of bridges, grading and right of way), 40 miles of new highway on a new location was placed in service last month in Texas on State Route No. 73. The new road extends between Katy and Alleyton and provides a 22-ft. roadway flanked by 7-ft. shoulders. The maximum horizontal curvature is 1 deg. 30 min., minimum vertical sight distance is 1000 ft., and maximum grade is 3 per cent.

Largest bridge job was construction of a $363,500 crossing over the Brazos River on the Waller-Austin county line. This bridge consists of two 320-ft. steel truss spans and two 60-ft. and four 40-ft. I-beam spans. Also necessary was the construction of bridges to carry the highway over State Route No. 36 and tracks of the A.T.&S.F. R.R. at Sealy. The minor bridges were built some years ago, when the grading was carried out.

The work was done by the Texas State Highway Department, D. C. Greer, state highway engineer, and M. C. Welborn and W. J. Van London, district engineers.

for the strength of filled plug welds and a study has been started pertaining to increasing the efficiency of riveted joints by means of plug and fillet welds.

Three programs have been outlined for research beginning this fall under the new Structural Steel Committee G of the Welding Research Committee. At Columbia University beam and girder splices and welding sequences and procedures for such splices will be studied by means of large scale static and impact tests. Lehigh University will continue with tests to develop standard forms of welded beam-to-column and beam-to-beam connections of flexible, semi-rigid and rigid types. The third program, at Carnegie Institute of Technology, will likely be a study of the capacity of welded load-bearing stiffeners.

A fundamental research paper of interest to users of structural steel included a report of tests made at Lehigh University on welded girders with inclined stiffeners, which show a very substantial increase in efficiency over girders with vertical stiffeners, in span lengths greater than 80 ft., with no increase in fabrication costs.

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Ground broken at New York for Battery Tunnel

President Roosevelt formally broke ground for the Brooklyn-Battery vehicle tunnel at New York on Oct. 28 at the site of the construction shaft in Brooklyn where the contractor has been at work since late in August clearing off old buildings.

The tunnel is to extend from Battery Park at the lower end of Manhattan Island under the East River to a ventilating shaft at Governors Island and thence under Buttermilk Channel to Hamilton Ave. in Brooklyn. It will consist of two 31-ft. diameter tubes about 10,000 ft. long. The tunnel will cost about $57,000,000 and approaches $23,000,000.

Contract for the Brooklyn shaft was let Aug. 19 to be completed in six months. Bids on the New York shaft are to be opened Nov. 19, and bids on the deep caisson shaft just off shore at Governors Island will be called early next year. It is hoped that bids on the tunnels at the Brooklyn end can be called in December or January. Work on the elevated highway approach in Brooklyn is under way by the Triborough Bridge Authority.

Bids on the cast-iron lining were opened Oct. 29, the low bidder being the Bethlehem Steel Co., $3,123,785. Other bidders were: U. S. Pipe & Foundry Co., $3,199,272; Continental Roll & Steel Foundry Co., $3,224,770, and Koppers Co., Bartlett-Hayward Division, $3,487,678.

Fort Wayne announces rates for sewage service

An ordinance was introduced when the Fort Wayne, Ind., city council met Oct. 22 to establish a schedule of rates for the city's new sewage treatment plant. The income will be used for retirement of the $3,000,000 city bond issue for financing the city's share of the $5,000,000 system now practically complete. A public hearing on the ordinance will be held Nov. 12.

Billings would be based on the following monthly schedule, with a minimum charge of 55 cents: For each 100 cu. ft. of water used not exceeding 25,000 cu.ft., 11 cents; for each 100 cu.ft. of water used within the 25,000-200,000 cu.ft. range, 10 cents; for each 100 cu.ft. of water in the 200,000-500,000 cu.ft. range, 9 cents; and for each 100 cu.ft. of water in excess of 500,000 cu.ft., 5 cents.

• • •

Salary study of Nevada road department finished

Following five and one-half weeks of study, Allen P. Richmond and Thomas E. Stanton, representing the American Society of Civil Engineers, on Oct. 18 transmitted to the board of directors of the Nevada Department of Highways a report on the salary range and personnel classifications of the department undertaken at the request of the highway director. The report recommends the adoption of a series of grade specifications or classifications for employees rated as engineers, and salary ranges corresponding to the grades. Adoption of a merit rating system for evaluating the qualifications and capabilities of the employees was also proposed in the report.

Purpose of the survey was to provide a series of objective standards of personnel qualifications and unbiased recommended salary ranges corresponding to each of those standards in keeping with the salary ratings of other western states and the federal government. This study was similar to that made last spring for the Arizona highway department (*ENR*, Apr. 4, 1940, p. 471).

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Mobile Tunnel toll schedule announced

A 25-cent toll for passenger cars and taxis with no charge for passengers in addition to the driver has been adopted by the city commission of Mobile, Ala. for the $4,000,000 Bankhead Tunnel now nearing completion. The rate of tolls ranges from the minimum of 15 cents for motorcycles to $1 for five-ton trucks, plus 50 cents for each two-axle trailer.

Wayne Palmer, consulting engineer, in preparing the toll schedule, pointed out that Boston is the only city enjoying lower tunnel rates than Mobile.

Fairchild Aerial Survey Photo

Freeway removes bottleneck at Hollywood, Cal.

To accommodate the immense volume of traffic coming into the city of Hollywood, Cal. from the northwest, the Cahuenga Pass Freeway shown above has been built. It is located in a natural cut in the hills that has been the main route toward Santa Barbara and points north since the Franciscan padres made a trail through this pass.

The above view, looking northward, shows Mulholland Dam and the Hollywood reservoir in the extreme upper right and the Hollywood Bowl at the extreme left.

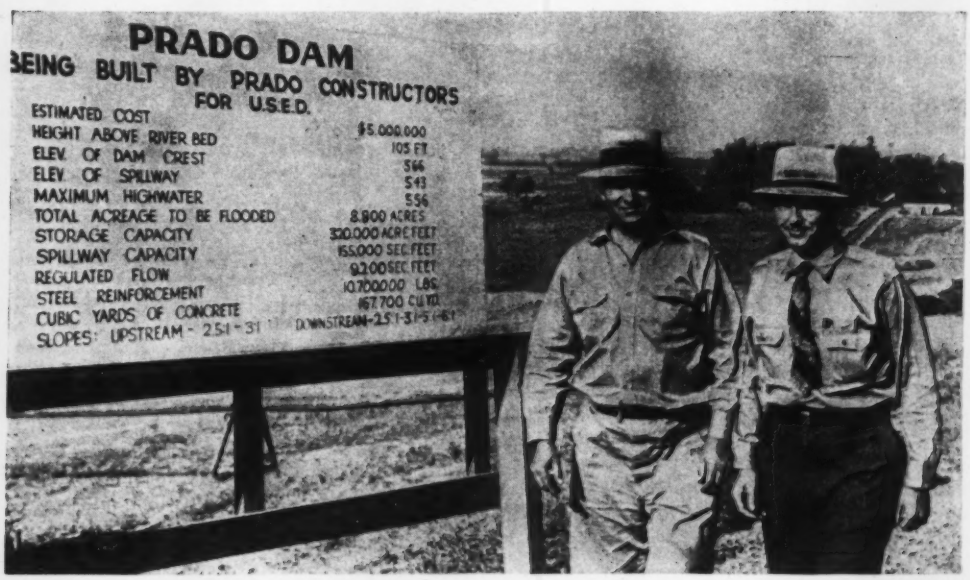
Taken before completion of the project, the photograph also shows temporary connections cutting across the main route in the middle distance.

MEN AT WORK

H. V. GRANT (left above), resident engineer for the San Francisco Housing Authority, and H. J. BRUNNIER, consulting structural engineer, are snapped beside the corrugated concrete projection separating front doors of adjoining family units of the Sunnydale Housing Project in San Francisco. To meet the rapid construction schedule necessary to construct 722 family dwellings in 400 days, line production methods were the rule. For example 7,220 roof trusses of 27-ft. span were cut and assembled on the job at the rate of 20 per hour.

Being appointed filter plant design engineer for the Philadelphia waterworks improvement just now getting under way accounts for the big smile of EUGENE A. HARDIN (above), designer of the Detroit filtration plant and assistant civil engineer on the Detroit sewage treatment works. Recently he has been design engineer for water and sewage projects for Consoer, Townsend & Quinlan, Chicago.

As construction engineers for the Wyoming highway department, each covering half the state, TALCOTT MOORE (left above) and J. G. SMITH are busy men. In charge of all surveys and construction, together they supervise expenditure of about $4,000,000 yearly for construction on 4,000 miles of roads.


PRADO DAM
BEING BUILT BY PRADO CONSTRUCTORS
FOR U.S.E.D.
ESTIMATED COST $5,000,000
HEIGHT ABOVE RIVER BED 105 FT
ELEV. OF DAM CREST 566
ELEV. OF SPILLWAY 543
MAXIMUM HIGHWATER 556
TOTAL ACREAGE TO BE FLOODED 8,800 ACRES
STORAGE CAPACITY 330,000 ACRE FEET
SPILLWAY CAPACITY 155,000 SEC. FEET
REGULATED FLOW 9,200 SEC. FEET
STEEL REINFORCEMENT 10,700,000 LBS.
CUBIC YARDS OF CONCRETE 167,700 CU. YD.
SLOPES: UPSTREAM - 2.5:1 - 3:1 DOWNSTREAM-2.5:1-3:1-5:1-6:1

For the California job described by the sign E. E. ASHLOCK is superintendent for the contractors and PAUL HACK (right) resident engineer for the U. S. Engineers.

MEN AND JOBS

E. M. DONHOWE, a member of the board of directors of the Central Branch of the Associated General Contractors of America, has resigned. Donhowe, president of the Union Construction Co., Des Moines, Iowa, has moved to Harrisburg, Pa., since his firm has contracted for paving work in that state. F. H. CARLSON, of the Fred Carlson Co., Decorah, has been named to replace Donhowe on the board until the next A.G.C. convention.

ARTHUR L. BOLEY, city engineer of Sheboygan, Wisc., received one of the 1940 veteran's award of the American Public Works Association at the association's recent convention in Detroit. Boley, following his engineering training at the University of Wisconsin, joined the city of Sheboygan in 1909. He was made assistant city engineer in 1923 and city engineer in 1931.

HENRY D. DOLGE, street sanitation supervisor in the Milwaukee department of public works, was honored recently by receiving the veteran's service medal of the American Public Works Association at the association's recent convention in Detroit. He has been with the city of Milwaukee since 1910.

LIEUT. COL. T. D. WEAVER has been promoted to that rank. Col. Weaver, who directed the first two years of construction at Bonneville Dam, has been assigned for the past year to the construction division in the office of the Assistant Secretary of War as an expert on electric power. In the Army since 1917, the Colonel was assistant district engineer at New York and New Orleans as well as district engineer at Bonneville.

RAYMOND T. HEALY of Portland, Conn., has been placed in charge of the Connecticut State Highway Department laboratory at Portland. He succeeds the late Frank C. Flood, under whom he had served as senior materials engineer and chief assistant of the laboratory.

D. R. SMITH, city engineer and municipal works director of St. John, N. B., has been named as demolition officer for the St. John zone under the Canadian air raid precautions regulations. About 1,200 men at St. John have been organized under the air raid precautions plan.

LIEUT. COL. GEORGE W. GILLETTE, district engineer for the U. S. Engineers at Wilmington, N. C. for the past two years, has begun new work at Fort Belvoir, Va. Col. Gillette, who succeeded the late Maj. Ralph Millis at Wilmington in 1938, is a graduate of North Carolina State school of engineering and the Army Engineers School. Col. Gillette served with the 6th Engineers, 3rd Division, in the World War. He was first assigned to the Wilmington district in 1921 as assistant to the district engineer and in 1934 was transferred to Hawaii. For two years prior to his return to Wilmington in 1938, he had charge of the construction section in the office of the Chief of Engineers, Washington. At Fort Belvoir he will be connected with the engineer's school.

J. H. CHAPPEL, engineer with the North Carolina Highway and Public Works Commission, has been placed in charge of a survey regarding a proposal to construct a four-lane dual highway between Fort Bragg and Fayetteville, N. C. The survey was requested by the U. S. Public Roads Administration.

H. G. COCHRANE, civil engineer of Montreal, has been engaged by the city of St. John, N. B. to direct relief projects of that city.

WALTER COOPER has been appointed city manager of San Diego, Cal. He takes over duties of that office from FRED RHODES, who has been acting as both city manager and director of public works. Rhodes will continue as director of public works. FRED TYLE is city engineer of San Diego.

HAROLD C. BATES has been made engineer and road superintendent of Lanark County, Ont., with headquarters at Perth. From 1917 to 1919 he was assistant engineer on the Grand Trunk Ry.

GUY MONTPETIT of the consulting engineering firm of Montpetit, LeBlanc and Pitt, Montreal, is now serving overseas as major with the Canadian Active Service Force.

ERIC P. MUNTZ, engineer-contractor of Dundas, Ont., and a vice president of the Engineering Institute of Canada, has joined the staff of the Foundation Co. of Canada, Ltd., at the company's head office in Montreal. Muntz, long prominent in connection with the National Construction Council of Canada, is engaged on special war contract work.

CARL BERG, landscape architect for the Louisville, Ky. board of park commissioners, has begun new duties as engineer-secretary of the Louisville city planning and zoning commission.

ERNEST H. PAFFRATH, assistant sewer commissioner of St. Louis, received the veterans' service award of the American Public Works Association at that organization's recent annual convention in Detroit. Paffrath entered public service in St. Louis in 1909, starting as assistant engineer of sewer construction. He became assistant sewer commissioner in 1922.

A. H. MORTON of Montgomery, Ala. has begun new duties as engineer of Hale County, Ala. Morton, a civil engineer, has been working for several years with the Alabama State Highway Department as assistant engineer.

C. L. ALBERTSON, associate engineer with the Bureau of Reclamation on the Roza division of the Yakima project and stationed at Yakima, has been promoted to the position of engineer on the Altus project in Oklahoma. His post at Yakima is taken by C. E. KLINGENSMITH, who was resident engineer during construction of the Roza diversion dam. Other changes among Roza engineers include: CLAIRE TITUS going to the Bonneville power administration at Portland, Ore. and DON E. JENNE, instrument man, being transferred to a railroad relocation project in connection with the Columbia Basin work.

ALLAN W. DOW, formerly of A. W. Dow, Inc., has been appointed consulting technologist for the Asphalt Institute, New York, according to J. E. PENNYBACKER, managing director. Dow, a pioneer and leading authority in the field of asphalt paving, for 12 years was connected with the engineering department of the District of Columbia. He is a graduate of the school of mines, Columbia University.

ROSCOE GUERNSEY, JR. has been appointed an instructor in civil engineering at the University of Texas. Guernsey is a graduate of Columbia University.

H. W. POLLOCK, road engineer of Clallam County, Wash. with headquarters at Port Angeles, has been called to service as first lieutenant in Battery A, 248th Coast Artillery, Harbor Defense to be stationed at Fort Worden. J. T. LAY, county construction engineer for the past five years, is acting as county road engineer.

THOMAS D. SAMUEL, JR., chief engineer and superintendent of the water department at Kansas City, Mo., was among those to receive the veteran's service award from the American Public Works Association early this month in Detroit.

LIEUT. COMDR. HECTOR C. GRISWOLD, civil engineering corps, U. S. Naval Reserve, Summit, N. J., has been ordered to active duty at the Navy Yard, New York, N. Y.

RFC has money for $50,000,000 of FHA housing

The activities for RFC participation in the defense housing program, an open secret for some weeks, was officially made public this week with announcement of the formation of Defense Homes Corp., an RFC subsidiary. With a capital of $10,000,000 obtained from the President's emergency fund, Defense Homes will function like any private entrepreneur, putting up 20 per cent of the cost of housing as equity capital and borrowing the rest from banks on an FHA-insured loan.

If purchasers can be found, Defense Homes will sell its equity to private operators, thus creating a revolving fund. But in any case its capitalization will provide $50,000,000 of housing.

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Road Builders list nominees for next year

H. G. Sours, assistant director and chief engineer of the Ohio state highway department, has been nominated for a second term as president of the American Road Builders' Association for the 1941-42 year. Nominations for vice presidents are: John B. Reinhold, Reinhold & Co. Inc., Pittsburgh, Pa.; John E. Ballenger, Ballenger Construction Co., Lakeland, Fla.; Lion Gardiner, Jaeger Machine Co., Columbus, Ohio; and D. A. McKinnon, state highway engineer, Helena, Mont. H. C. Whitehurst, director of highways, Washington, D. C., has been nominated for treasurer.

Those nominated for directors for a three year term ending in 1944 include: C. W. Brown, chief engineer of the Missouri State Highway Department; Frederick Hoitt, secretary of the New England Road Builders' Association; G. D. Kennedy, deputy commissioner of highways of Michigan; C. H. Purcell, California state highway engineer, Sacramento; E. L. Roettiger, Wisconsin state highway engineer, Madison; C. J. Sherlock, Alabama director of highways; and Charles M. Upham, engineering director of the American Road Builders' Association, Washington, D. C.

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Indiana purchases Wabash River bridge

The Indiana State Toll Bridge Commission has purchased for $945,000 a highway bridge across the Wabash River at New Harmony, Ind. The commission will soon take bids for a $1,045,000 issue of revenue bonds to pay for the structure. The $105,000 difference between the bridge sale price and the bond issue is to aid the commission in setting up a sinking fund.

JOBS OF THE WEEK

STEEL PLANT, Worcester, Mass.

American Steel & Wire Co., Worcester, Mass., will build by separate contracts a 2-story, 120x185-ft. reinforced-concrete building; a 1-story, 500x1,035-ft. plant; a 2-story, 60x440-ft. plant; and a 1-story, 80x400-ft. warehouse; and a physical laboratory. Cost of the work is estimated at $5,000,000.

SMALL ARMS PLANT, Kansas City, Mo.

War Department, Wash., D. C., awarded a contract on a cost-plus-fixed-fee basis for constructing and operating a small arms plant to the Remington Arms Company, Inc., Bridgeport, Conn. The company will operate the plant, which is estimated to cost $10,000,000.

POWDER PLANT, Weldon Springs, Mo.

Atlas Powder Company, Wilmington, Del., was awarded a contract on cost-plus-fixed-fee basis for constructing and operating a powder plant for the manufacturing of TNT and DNT for the Ordnance Department. The work to be done on a 20,000-acre site in St. Charles County is estimated to cost $15,000,000.

FACTORY, North Canton, O.

Warren-Hoffman Co., Canton, O., will construct a 4-story, 980x120-ft. factory for manufacturing shell fuses for the Hoover Sweeper Co., North Canton. Estimated cost of the project, with equipment, is $625,000. Charles E. Firestone, Canton, is architect for the work.

ROAD RELOCATION, Mississippi

Robinson & Young, Baton Rouge, La., were low bidders Oct. 24 for constructing and relocating the Illinois Central R.R. tracks and a state highway across Sardis Dam reservoir in Lafayette and Marshall counties 11 mi. north of Oxford, Miss. The work is being done for U. S. Engineers, Vicksburg, Miss. and is estimated to cost $720,426.

AIRPORT, Tallahassee, Fla.

Ivy H. Smith and S. S. Jacobs Co., Jacksonville, Fla., were awarded the contract for constructing a complete airport, including 7 administration buildings, 32 barracks, landing fields, facilities, runways, lighting, and drainage under terms of a $1,260,000 contract on cost-plus-fixed-fee basis. Constructing Quartermaster, MacDill Field, awarded the contract. Southern Engineers and Architects, Jacksonville, are architects for the work.

AIRPLANE FACTORY, Cincinnati, O.

Wright Aeronautical Co. is constructing a 1,700,000-sq.ft. aircraft engine plant by separate contracts. Grading of the site is being done by Richter Transfer Corp. Cincinnati; steel for the main building is being supplied by Whitehead & Kales Co., Detroit; and steel for the foundry is being furnished by Joseph T. Ryerson & Son, Detroit. Albert Kahn, Inc., Detroit, is architect for the $37,000,000 project.

SMOKELESS POWDER PLANT, Radford, Va.

War Department, Washington, D. C. awarded the contract for constructing and operating the second unit of the smokeless powder plant to Hercules Powder Co. Wilmington, Del. Estimated cost of the work is $10,000,000. Mason-Hanger Co. Inc., New York, N. Y. will construct both units. The first unit, estimated to cost $25,000,000, is also being built and operated by Hercules Powder.

TEMPORARY HOUSING, Fort Sill, Okla.

A. J. Rife Construction Co., Dallas, Tex., was awarded a $1,603,240 contract by the Constructing Quartermaster for the temporary housing and utilities.

TEMPORARY HOUSING, Fort Ord, Calif.

Ford J. Twait Co. and Morrison-Knudson Co., Inc., Los Angeles, Calif., received a $3,448,357 contract for constructing the temporary housing.

HOUSING PROJECT, Norfolk, Va.

Ralph S. Herzog, Philadelphia, Pa., was awarded a $1,641,254 contract for constructing the Merrimack Housing Project for the Norfolk Housing Authority. V. A. Moore, Norfolk, is architect for the project, which is to house workers at the Norfolk Navy Yard.

GRADE CROSSING ELIMINATION, Brooklyn, N. Y.

Arthur A. Johnson Corp. and Necaro Co., Inc., Long Island City, N. Y. are constructing the subway section along Atlantic Ave. from Scheneck to Montauk Aves. for the Transit Commission, New York, and the Long Island R. R., New York, under terms of a $1,566,600 contract.

NOTE—Additional bidding and contract news on over 800 projects, large and small, appear in the Construction News Section beginning on page 14.

Contract construction for CAA airport program

By far the greater part of the construction in the $40,000,000 civil airport program will be done through private contractors. Major Lucius D. Clay who has been taken from the Corps of Engineers to be secretary of the Airport Approval Board which, with CAA Administrator Connolly, administers the program, so informed an *ENR* representative this week. Bulk of the work to be done will be grading and paving, with some installations of lights and radio equipment.

Since land and buildings must be provided by local agencies, airports to be built with the money are to be civil fields with military utility. Though a few new airports will be built, most of the work will be expansion of existing fields. All fields must be owned by local public bodies, which must furnish land and agree to maintain the port. The Army and Navy have submitted lists of fields they would like to see built or improved. Between now and the middle of November, Administrator Connolly and Major Clay, working with the military and with the engineers of CAA's airport section, will select from these projects those which can be carried out with the money on hand. This list will then be submitted for approval to the Approval Board, made up of the secretaries of War, Navy and Commerce. Detailed design of projects and awarding of contracts will be turned over to the various construction agencies of the federal government—probably including the Corps of Engineers, Bureau of Yards and Docks, FWA, and Public Roads Administration. Choice of agency will depend on the features of the individual project. CAA's airport section will function in this setup as consultant on design and have general supervision of the program.

Major Clay, who will have principal responsibility for this program, has been district engineer at Deniso Dam.

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Labor troubles continue to hinder federal building

Refusal of union painters in Washington to handle a resinol base paint which requires only two coats has thrown another obstacle before the strike bedevilled federal building program. The Social Security building is being rushed to completion with the aid of a special half-million appropriation to speed up the work so that the building can be occupied by the Defense Commission. Plaster has just been applied to the walls and is still wet. The Public Buildings Administration is anxious to get the building occupied but is afraid to apply the usual four coats of lead and oil paint over the wet plaster for fear of future peeling.

To get around this, PBA changed the specifications to permit use of a paint with a resinous binder, which can be applied over wet plaster. However, it is impossible to use more than two coats of this paint, or trouble will result, and the painters feel they are being cheated out of two coats. They refuse, therefore, to apply the new paint. Curiously enough, no trouble on this score arose on the government's Railroad Retirement Building, where some of the same paint was used.

PBA officials are angry over the delay, for which they feel there is no legitimate excuse, and are not inclined to make any concessions to the union. Present plan is to go ahead and let the building be occupied with bare plaster.

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Army engineers to add a St. Lawrence district

The War Department announced Oct. 28 that a new district to be known as the St. Lawrence River District with headquarters at Massena, N. Y., would be established by the Chief of Engineers. The district will engage in surveys and other preliminary work on the International Rapids section of the St. Lawrence River project as directed by President Roosevelt Oct. 16.

Lieut. Col. A. B. Jones, U. S. Engineers, will be district engineer. He will be assisted by Maj. Doswell Gullatt and Capt. Alden K. Sibley. The St. Lawrence River District will not be included in the Great Lakes Division but will report directly to the Chief of Engineers.

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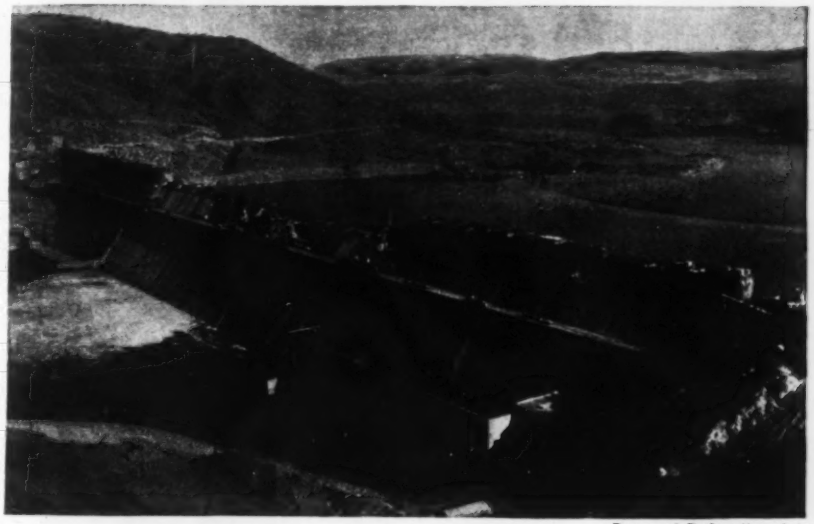
Construction of Madera Canal started

The Bureau of Reclamation has notified the Utah Construction Co. to proceed with construction of a section of the Madera Canal, part of the Central Valley project in California. The $397,963 contract calls for building 8½ miles of concrete-lined canal starting near Friant Dam on the San Joaquin River and ending in the vicinity of the Fresno-Yosemite highway in the foothills east of Madera.

With a diversion capacity of 1,000 sec.-ft. the first section of the canal will be 35 ft. wide at the top, 10 ft. wide at the bottom, and will carry water 9 ft. deep.



Bureau of Reclamation photo

Work begun to close grand Coulee adjustment slots

Grouting work has begun at Grand Coulee Dam to close the five "twist-adjustment slots." This is in keeping with the construction plan to complete all mass concrete this fall and to cool and grout the concrete before the drum gates are grouted in. The reason for having left the adjustment slots is that each of the vertical cantilevers of concrete which comprise the dam proper may have some tendency to twist. Hence, by leaving slots between these adjoining portions of the structure until after this twist has occurred, internal stresses will be lessened. The slots, 5 ft. wide, are temporarily filled with sand as the adjacent blocks are built up and are used on only the higher portion of the dam. When grouting begins the sand is first flushed out and then successive lifts are filled one after the other.

First water will flow over the spillway of Grand Coulee Dam, which is at El. 1,260, in May or June of next year or whenever the inflow into the reservoir exceeds the capacity of the valves through the dam. By that time there will be in operation 60 valves with a total capacity of 250,000 sec.-ft. with a reservoir stage of El. 1,180.

OBITUARY

HENRY B. SEAMAN, 79, from 1907 to 1910 chief engineer of the Public Service Commission of New York City, and well known subway builder, died Oct. 24 in New York. Following graduation from Swarthmore College with a degree in civil engineering in 1881, he worked on the Erie R. R. and later became resident engineer on construction of the Buffalo, Rochester & Pittsburgh R. R. Soon afterward he was with the bridge department of the Pennsylvania Railroad and later worked for the New York, New Haven & Hartford R. R. Following consulting work in New York City, he joined the Public Service Commission.

JAMES E. PHILLIPS, 57, an engineer with the Los Angeles aqueduct department of water and power, died Oct. 26 in Los Angeles. Following his education at Rose Polytechnic Institute, Phillips worked with the Chicago & Western Ry., was in private practice for a time at Rockville, Ind. and Portland, Ore., and then served as surveyor of Parke County, Ind. In 1912 he joined the Los Angeles city water department as draftsman to advance to engineer.

EDWARD GOLDSMITH BAILEY, 82, retired civil engineer and builder, died in Woodstock, Vt. Oct. 22. Following graduation from Dartmouth in 1879, he joined the engineering department of the Northern Pacific R. R. in Montana. In 1885 he was chief engineer with the James River Valley R. R. in North Dakota and later worked with the Duluth & Manitoba R. R. in the same position.

WILLIAM B. STOREY, 82, for 13 years president of the Atchison, Topeka & Santa Fe R. R., died in Chicago Oct. 24. Storey joined the Southern Pacific in 1881 as assistant engineer, later he served as assistant engineer with the U. S. Debris Commission, and then as chief engineer and general superintendent of the San Francisco and San Joaquin Valley R. R.

E. N. INGRAM, 36, civil engineer of Pineville, Ky. connected with the firm of Hart & Hart and working on the White River flood control project at Muncie, Ind., died last week in that city.

ARNOLD BENTON, 44, engineer of McKean County, Pa., died Oct. 18. He was engineer of the Tidewater Pipe Co. for the Bradford, Pa. district from 1920 to 1926.

LOUIS H. MAY, 91, until retiring 8 years ago superintendent of the Forest City district of the Scranton-Spring Brook Water Service Co., died Oct. 19 in Carbondale, Pa.

HERBERT C. HARTWELL, 65, who joined in 1898 the maintenance department of the Boston Elevated Ry., died Oct. 27 at Milton, Mass.

HENRY J. HAMIL, 60, prominent Montana contractor and architect, died Oct. 17 at Bozeman, Mont.

WILLIAM A. BURNETT, for the past 25 years superintendent of streets at Wellesley, Mass., died Oct. 23.

HAROLD O. R. HORWOOD, 59, industrial steel designing engineer and graduate of Toronto University who practiced at Vancouver, B. C. for the past 35 years, died recently.

C. E. WUNDER, 53, Philadelphia architect and engineer, died in that city Oct. 19. From 1905 to 1910 he was a partner in the firm of Peuckert & Wunder. Since 1914 he had been engaged in business under his own name with offices in Philadelphia.

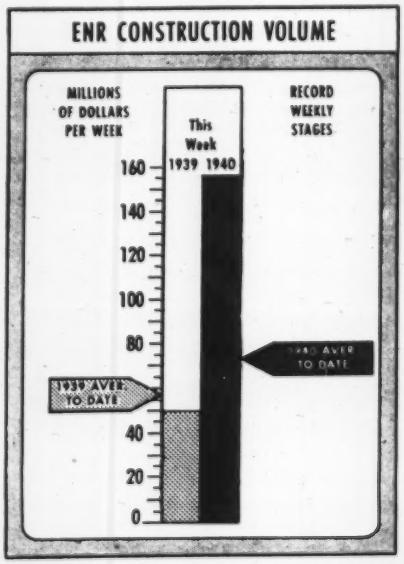
THOMAS C. FORSYTHE, 52, Philadelphia contractor who built the foundations for Convention Hall and the Customs House Building in Philadelphia, died in that city Oct. 21.

CONTRACTS AND CAPITAL

PRIVATE ENGINEERING construction for the week reached the highest total reported since March, 1930. The near-record volume is due to increased awards in both commercial and industrial buildings. It tops the 1939 week by 311 per cent and is 124 per cent above a week ago. Public construction gains 158 per cent over a year ago, but drops 13 per cent from last week's total.

The week's construction volume, $157,754,000, is the third highest of the year, 216 per cent higher than in 1939, and 24 per cent above last week. This is the third consecutive week that the awards have topped the $100,000,000 mark.

Construction volume for the year to date, $3,205,815,000, has already passed all annual totals subsequent to 1929. This figure is 25 per cent above the volume for the 44-week period last year. Private construction is 31 per cent above the 1939 period. Public awards are 23 per cent higher than a year ago as a result of the 244 per cent increase in federal work.



Industrial buildings are at the second highest peak of the year due to large awards for privately owned defense plants in Ohio and Massachusetts. Commercial buildings top all weeks since August 24, 1939.

New capital for construction purposes for the week totals $9,610,000, a decrease of 45 per cent from a year ago. The volume is made up of $9,020,000 in state and municipal bonds, and $590,000 in corporate security issues.

New construction financing for the year to date, $3,533,373,000, tops the total for the 44-week period last year by 57 per cent.

CONTRACTS

(Thousands of dollars)

	Week Ending Nov. 2 1939	Oct. 26 1940	Oct. 31 1940
Federal	$8,268	$63,715	$73,733
State & Municipal	23,017	29,211	27,114
Total public	$31,285	$92,926	$80,647
Total private	18,755	34,391	77,107
TOTALS	$50,040	$127,317	$157,754
Cumulative 1940	(44 weeks)		$3,205,815
1939	(44 weeks)		$2,560,334

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial building, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1939 44 Wks.	1940 44 Wks.
NON-FEDERAL	$1,123,014	$1,271,812
Corp. Securities	188,660	214,830
State & Mun.	448,662	436,345
R.E.A. loans	89,445	40,000
U.S.H.A. loans	201,647	180,465
R.F.C. loans	4,600	185,672
Fed. Aid-Hwy.	190,000	184,000
FEDERAL	$1,128,028	$2,281,961
TOTAL CAPITAL	$2,251,042	$3,553,373

FHA MORTGAGES

	Week Ending Oct. 28 1939	Oct. 19 1940	Oct. 26 1940
Selected for appraisal	$21,783	$24,517	$26,640*
Cumulative 1940	(43 weeks)		$1,089,94*
1939	(43 weeks)		$966,628

* Subject to revision.

ENR INDEX NUMBERS

Index Base=100		1913	1926
Construction Cost	Oct., '40	245.02	117.78
Building Cost	Oct., '40	204.02	120.29
Volume	Sept., '40	324	142

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

HIGHWAYS, PENNSYLVANIA

OWNER: Pennsylvania State Highway Department, I. L. Hughes, secretary, Harrisburg, Pa. T. C. Frame, chief engineer.

PROJECT: Reinforced concrete paving 39,221 linear feet of Highway 199, Section 5, Traffic Route 209, Lykens Boro, Wiconisco, Williams and Porter Townships, Dauphin and Schuylkill Counties, Pennsylvania. Pavement 22-ft. wide. Project also includes construction of parking lanes 8- to 10-ft. wide; seven concrete structures; storm sewer; and stream bed improvement.

CONDITIONS: Contractor to furnish all materials and complete work in 135 working days. Rail and highway transportation facilities available. Wage rates specified are: skilled labor, 75c. per hr.; semi-skilled, 50c.; and unskilled, 45c. per hr.

BIDS: Thirteen bids were received September 27, 1940, ranging from the contract low or $518,059 to $559,091.

LIST OF BIDDERS:

1. H. W. Shaull & Son, Mechanicsburg, Pa. (contract) $518,059
2. C. W. Good, Lancaster, Pa. 523,728
3. John F. Bloomer, Apollo, Pa. 525,982
4. R. W. Smith & Son, Inc., Dillsburg, Pa 527,333
5. S. J. Groves & Sons Co., Ridgefield, N. J 531,076
6. Tri-State Engineering Co., Washington, Pa. 537,117
7. Union Construction Co., Harrisburg, Pa. 542,532
8. Central Pennsylvania Quarry, Stripping & Constr. Co., Hazleton, Pa. 545,500
9. Johnson, Drake & Piper, Inc., Freeport, N. Y. 547,003
10. C-G Construction Co., and States Engineering Co., Mansfield and Harrisburg, Pa. 548,145
11. H. J. Williams Co., Inc., York, Pa. 551,364
12. John H. Swanger, Lancaster, Pa. 551,611
13. Frank Mashuda Co., Acme, Pa. 559,091

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	L.S.	$1,200.00	$15,000.00	$18,000.00
2. Class I excavation	258,604 c. y.	.44	.45	.43
3. Class II excavation	6,242 c. y.	1.83	1.60	2.00
4. Subgrade	105,873 s. y.	.10	.19	.09
5. Shoulders	34,046 l. f.	.15	.15	.20
6. Native stone or cr. aggregate base crse.	10,339 s. y.	.90	.90	.85
7. Rein. cem. conc. pavement, 9-in.	95,534 s. y.	2.48	2.69	2.60
8. Rein. cem. conc. wearing surf., br. floors	386 s. y.	2.70	2.00	2.50
9. Bitum. surf. course, HE-1, 2-in.	381 s. y.	.85	1.00	.90
10. Bitum. surf. course, HE-6, 2-in.	9,949 s. y.	1.00	1.00	.90
11. Class A concrete	447 c. y.	26.50	24.00	21.00
12. Class B concrete	391 c. y.	22.50	16.00	20.00
13. Plain steel bars	126,783 lb.	.04	.0425	.045
14. Plain structural steel	3,087 lb.	.08	.10	.10
15. Stone backfill for struct.	5 c. y.	3.00	3.00	5.00
16. Cement rubble masonry	453 c. y.	18.50	14.00	15.00
17. Dry rubble masonry	1 c. y.	11.00	12.00	20.00
18. Grouted stone slope wall (spillway)	44 c. y.	12.50	12.00	15.00
19. Grouted rubble paving (stream beds)	63 c. y.	12.50	14.00	15.00
20. Type F-1 endwalls, incl. rails	3 ea.	110.00	80.00	150.00
21. Type F-2 endwalls, incl. rails	19 ea.	110.00	75.00	125.00
22. Manholes	2 ea.	125.00	50.00	150.00
23. Type B inlets	17 ea.	120.00	75.00	120.00
24. Type D inlets	2 ea.	100.00	80.00	100.00
25. Type E inlets	1 ea.	100.00	80.00	100.00
26. Type F inlets	6 ea.	110.00	100.00	100.00
27. 15-in. cast iron pipe	70 l. f.	3.75	2.65	3.25
28. 18-in. cast iron pipe	526 l. f.	4.35	3.30	3.50
29. 36-in. cast iron pipe	76 l. f.	10.50	9.10	11.00
30. 30-in. ex. heavy cast iron pipe	26 l. f.	14.80	12.30	15.00
31. 36-in. ex. heavy cast iron pipe	26 l. f.	18.60	16.10	25.00
32. 15-in. corr. metal pipe	366 l. f.	2.15	1.65	2.25
33. 36-in. corr. metal pipe	60 l. f.	6.00	4.40	7.00
34. 36-in. perf. asph. coated corr. metal pipe	72 l. f.	7.50	5.55	12.00
35. 15-in. rein. cem. conc. pipe	908 l. f.	3.00	1.80	2.25
36. 18-in. rein. cem. conc. pipe	1,452 l. f.	3.50	2.25	2.60
37. 24-in. rein. cem. conc. pipe	624 l. f.	4.75	3.30	3.30
38. 30-in. rein. cem. conc. pipe	274 l. f.	6.35	5.25	5.50
39. 36-in. rein. cem. conc. pipe	536 l. f.	8.00	5.75	7.00
40. 42-in. rein. cem. conc. pipe	298 l. f.	12.00	7.55	9.60
41. 48-in. rein. cem. conc. pipe	208 l. f.	13.00	10.00	11.00
42. 36-in. ext. str. rein. cem. conc. pipe	146 l. f.	9.00	6.50	8.00
43. 48-in. ext. str. rein. cem. conc. pipe	132 l. f.	13.50	10.65	12.00
44. Pl. cem. conc. or vit. clay pipe, 15-in	6 l. f.	2.50	1.35	2.00
45. Pl. cem. conc. or vit. clay pipe, 18-in	639 l. f.	2.75	1.85	2.20
46. Pl. cem. conc. or vit. clay pipe, 24-in	760 l. f.	3.00	2.60	3.00
47. 18-in. triple str. vit. clay pipe	74 l. f.	2.50	3.50	3.00
48. 4-in. tile underdrain	12,280 l. f.	.70	.65	.70
49. 4-in. tile outlets	996 l. f.	.70	.60	.70
50. Subgrade drains	8,000 l. f.	.40	.35	.35
51. Grouted rubble gutter	464 s. y.	5.00	3.25	3.00
52. Type 1A, 2A, 3A or 4A guard fence	5,472 l. f.	.57	.60	.70
53. Type 1B, 2B, 3B or 4B guard fence	19,056 l. f.	.52	.55	.65
54. Type 1, 2, 3 or 4 end anchorages	104 ea.	20.00	20.00	20.00

RAILROAD CONSTRUCTION, ARKANSAS

OWNER: U. S. Engineer Office, Little Rock, Ark.; Lt. Col. S. L. Scott, district engineer.

PROJECT: Construction of approximately 4 miles of railroad between existing Missouri Pacific Railroad north of Norfolk, Ark., and the Norfolk Dam site. Project is divided into two sections. First involves grading, drainage structures and riprapping; second involves laying of track and ballast and other necessary work including guards, gates, fencing and approach paving.

CONDITIONS: Contractor to furnish all materials. Rail and highway facilities available. Prevailing wages to be paid on project.

BIDS: Five bids on Lot No. 1 were opened September 24, 1940, ranging from the low of $44,484 to $57,461. At the same time seven bids were opened on Lot No. 2, ranging from a low of $79,051 to $138,945. Engineers, however, recommended acceptance of low combination bid of $122,610. Only one other combination bid was received, $162,141. Engineer's estimate $182,629.

LIST OF BIDDERS:

1. R. J. Reid Contracting Co., Birmingham, Ala. (contract) $122,610
2. John Kerns Constr. Co., Omaha, Nebr. 162,141

Lot No. 1—Grading and drainage

Item	Quan.	Unit Prices (1)	(2)
1. Clear and grub	L.S.	$1,800.00	$5,000.00
2. Grading, excavation (common)	40,500 c. y.	.30	.24
3. Grading, excavation (rock)	17,500 c. y.	.95	.68
4. Grading, borrow (unclass.)	10,000 c. y.	.27	.24
5. 12-in. corr. metal culvert	100 l. f.	1.50	1.50
6. 18-in. corr. metal culvert	210 l. f.	2.25	2.10
7. 21-in. corr. metal culvert	168 l. f.	3.25	3.10
8. 24-in. corr. metal culvert	110 l. f.	3.50	3.50
9. 30-in. corr. metal culvert	122 l. f.	4.35	4.30
10. 36-in. corr. metal culvert	70 l. f.	5.10	5.00
11. 42-in. corr. metal culvert	294 l. f.	7.25	6.00
12. 54-in. corr. metal culvert	50 l. f.	11.00	11.10
13. 72-in. corr. metal culvert	56 l. f.	16.00	14.50
14. 84-in. corr. metal culvert	204 l. f.	20.00	16.90
15. Dumped riprap	3,300 c. y.	.50	1.83
16. Hand-placed riprap	80 c. y.	5.00	4.45

Lot No. 2—Trackwork

Item	Quan.	Unit Prices (1)	(2)
1. Track and ballast	25,208 l. f.	$2.83	$4.42
2. Turn-out, complete	4 ea.	700.00	784.00
3. Private road crossings	4 ea.	60.00	50.00
4. Public road crossing	L.S.	150.00	174.00
5. Approach surfacing	30 s. y.	2.00	4.50
6. Signs	L.S.	75.00	111.00
7. Stock guard	1 ea.	80.00	138.00
8. Right-of-way fence	2,100 rd.	2.00	1.00
9. Right-of-way fence gates	9 ea.	12.00	27.00

CONSTRUCTION REPORTS

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ELSIE EAVES, Manager *SCOTT McLEOD, Statistician*
(Daily service also available—Write for details)

Location of ENR Correspondents

Symbols and Abbreviations Include:

† Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger; water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

Classes of Construction

(Named in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges, Grade Cross'gs
Streets & Roads
Earthwork, Waterways
Unclassified
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings

Stages Reported

PROPOSED: (except Streets & Roads):

BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR);

LOW BIDDERS: All low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

WATER SUPPLY

PROPOSED WORK

Calif., Arcata—Stand-by water sys. to serve Calif. Barrel Company's plant, 200,000 gal. redwood tank and pressure pump or a deep well and pump.

Calif., Bishop—Bids in February, WW sys. CD 10/22—ENR 10/24.

Calif., Blue Lake—Voted $65,000 bonds, WW sys. CD 9/24—ENR 9/26.

Calif., Kingsburg—Exten. WW sys., mains, services, well and pump plant. Over $15,000.

Calif., San Bruno—Water sys. 60 acre subdivision El Camino Real. $15,000 or more. City and G. W. Williams Co., 10 California Dr., Burlingame, will share in cost, each to pay half.

Mo., Fayette—Voted $25,000 bonds purification plant at WW. $30,000. G. Todd, mayor. J. W. Shikles & Co., New York Life Bldg., Kansas City, Mo., engrs.

Mo., Kansas City—Water softening plant. $200,000. K. K. King, dir. Water Dpt.

†N. J., Fort Hancock (Sandy Hook)—War Dpt., 20 St. and Constitution Ave. N.W., Wash., D. C., water tanks, water and sewer lines. $36,890. WPA. W. D. Cougle, 1102 S. Broad St., Trenton, WPA and owner's engr.

N. Y., Brooklyn—Dpt. Water Supply, Gas & Electricity, Municipal Bldg., New York, watermains. $377,000. WPA. W. W. Johnston, 70 Columbus Ave., New York, dir. Div. Operations.

N. Y., Long Island City—President Queens Boro, 21-10 49 Ave., watermains Queens Boro. $379,100. WPA. W. W. Johnston, 70 Columbus Ave., New York, dir. Div. Operations.

N. Y., New York—Dpt. Water Supply, Gas & Electricity, Municipal Bldg., watermains, various locations. $157,000. WPA. W. W. Johnston, 70 Columbus Ave., dir. Div. Operations.

★**N. Y., New York**—President Bronx Boro, 851 Grand Concourse, watermains, Bronx Boro. $871,480. WPA. W. W. Johnston, 70 Columbus Ave., dir. Div. Operations.

N. Y., St. George—Dpt. Docks, Pier A, North River, New York, watermains. $289,400. WPA. W. W. Johnston, 70 Columbus Ave., New York, dir. Div. Operations.

N. C., Rocky Mount—$260,000 bond election Nov. 19, water supply sys. L. B. Aycock, city mgr. J. E. Sirrine & Co., Greenville, S. C., engrs.

Wis., LaValle—J. Glene, village clk., defeated bonds, watermains. $86,000. F. J. Davy & Son, LaCrosse, engr. CD 8/22—ENR 8/29.

BIDS ASKED

Bids Asked November 7

Mass., Boston—Commonwealth of Massachusetts, Metropolitan Dist. Water Supply Comn., R. N. Molt, secy., K. R. Kennison, ch. engr., 20 Somerset St., Contr. 107, service building, appurtenances, concrete road, Quabbin Hill, Ware. Over $25,000.

Bids Asked November 8

N. C., Woodland—Water and sewer imprvs. W. F. Freeman, High Point, consult. engr. CD 10/2—ENR 10/10.

Bids Asked November 9

†Virginia—Con. Q.M., Fort Monroe, 2 elevated steel water tanks, one at Fort Story, other at State Rifle Range, Virginia Beach; adv. ENR 10/31.

Bids Asked

Calif., Albany — Regents of University of California, Berkeley, WW sys. appurtenances, Gill Tract, for Dpt. Agriculture, University of Calif.

LOW BIDDERS

Ala., Anniston—G. S. Coleman, mayor, Oct. 17, water lines, from J. B. McCrary Co., 22 Marietta Bldg., Atlanta, Ga. **$300,000.** CD 10/14.

†Calif., Muroc—Con. Q.M., March Field. Oct. 22, 200,000 gal. water tank, pipe and pump, at Muroc Dry Lake, from Pittsburgh-Des Moines Steel Co., 740 S. Bway., Los Angeles. **$29,180.** Est. $27,000. CD 10/18.

†Calif., San Francisco — Con. Q.M., Fort Mason, San Francisco, Oct. 22, rein.-con. reservoir cover for main supply reservoir at Presidio of San Francisco, from Schuler & McDonald, 1719 16 Ave., Oakland. **$37,000.** CD 10/9.

Md., Crownsville—Crownsville State Hospital, Crownsville, Oct. 14, water treatment and sewage treatment works, alterations and addns., from Chas. J. Spielman Co., 2210 Russell St., Baltimore. **$93,107.** CD 10/7—ENR 10/10.

Wash., Seattle—Bd. P. Wks., Oct. 17, watermains, 16 Ave. N.E., et al., from Valley Constr. Co., 4354 Henderson St., **$30,735.** Est. $33,751. CD 10/9.

CONTRACTS AWARDED

Colo., Cortez—Enlarging reservoir. **WPA. $42,000.** CD 7/5—ENR 7/11.

D. C., Wash.—Dist. Comrs., District Bldg., c.i. or steel watermain, Anacostia Pump. Station, to Alabama Ave. S.E., to W. F. Brenizer, 1501 S. Capitol St. **$68,285.** Bids 10/11, awarded 10/22. CD 10/1—ENR 10/3.

Ill., Southern View (P. O. Springfield)—E. Lloyd, village clk., water sys., **WPA. $40,000.**

Ind., Oakland City—Imprv. WW sys., new tank, exten. lines, **WPA. $37,000.**

Ia., Hancock—Watermains, sewerage sys. **WPA. $39,000.**

†Me., Portland—Con. Q.M., Fort Lovett, water lines, to Portland Water District Co., 16 Casco St., **$73,000.** Bids 10/15, awarded 10/15.

Mo., Sugar Creek—Standard Oil Co., Sugar Creek, relocating water intake in Missouri River, near Big Blue Bend, due to change of river channel, to James Constr. Co., 1111 Minnesota Mutual Life Bldg., St. Paul, Minn. Est. over **$25,000.** Awarded 10/7.

Nebraska—Layne-Western Co., 1010 W. 39 St., Kansas City, Mo., laying 12 mi. 14 in. water pipe between Rulo and Falls City, to Dobson & Robinson, 823 1st Natl. Bank Bldg., Lincoln. Est. **$325,000.** Bids 10/19, awarded 10/21. CD 10/15—ENR 10/17.

Neb., Auburn—O. B. Hill, city clk., WW sys. imprvs., pipe line, wells, pumphouses, 3 turbine pumps, meters, filtering house. **WPA. $50,000.**

N. J., Beachwood — C.i. watermains, hydrants, 270 house connections, various streets south of railroad. **WPA. $32,028.** CD 6/3—ENR 6/6.

N. J., Bridgeton — Watermains. Owner builds. **$20,000.** E. Maier, city engr.

N. J., Camden—New York Shipbuilding Co., Bway. and Fairview Sts., Camden, water treatment plant, to L. Shaffer, 1310 Spruce St., Phila., Pa. Est. **$15,000.** S. Jelinek, 1310 Spruce St., Phila., Pa., engr.

†N. J., Fort Dix—Con. Q.M., Governors Island, N. Y., c.i. watermains in remount area and in New Jersey Ave. **WPA. $41,398.** CD 10/22—ENR 10/24, under Wrightstown.

N. J., Newark—Excavating, sheating, etc., for 60 in. aqueduct. **WPA.** $457,885. CD 8/27—ENR 8/29.

N. J., Pequannock—Watermains in Pequannock Ave. to Old Route 23 to Mountain Ave., **WPA. $88,155.** J. F. Sheehan, foot S Ave., Paterson, WPA and owner's engr.

N. Y., Utica—Water Bureau, City Hall, pipe suspension bridge over Trenton Falls Chasm, to Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa. Over **$15,000.** H. B. Miles, City Hall, supt. water. CD 1/31—ENR 2/8.

Tex., El Paso—WW sys. imprvs., grading earthern reservoir site, retaining walls, filling abandoned swimming pool, replacing watermains. **WPA. $59,367.**

Tex., Grand Saline—Imprv. existing WW sys., supply lines, pumping unit, reconditioning some existing pipe mains, fire hydrants. **WPA. $42,531.**

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Calif., Newman—Outfall sewer, $45,000. J. S. Bates, 3134 Eton St., Berkeley, engr. CD 7/1—ENR 7/4.

Calif., Niles—Supervs. Alameda Co., Oakland, storm drainage imprvs., Niles Area. $25,000. B. Hamilton, Court House, Oakland, co. surv.

Calif., Oakland — Completed plans sewers Doncaster Pl., Oakmore Manor Tract. W. N. Frickstat, city engr.

Conn., Darien—J. C. Molinar, chn. Incinerator Comn., Town Hall, incinerator, garbage and rubbish disposal. $60,000. Funds appropriated. H. W. Taylor, 9 Park Pl., New York, N. Y., engr. CD 5/21—ENR 5/23.

Conn., Hartford—City, Bd. Aldermen, election Nov. 5 to vote on approval construction 4,000 ft. rein.-con. conduit, to enclose Cemetery Brook location near Yale St. to point above New Britain Ave. $190,000. R. J. Ross, city engr.

Fla., Fort Pierce—North St. Lucie River Drainage Dist., Fort Pierce, drainage in Five Mile Basin. Over $25,000.

Fla., Orlando—Garbage disposal plant (4 new furnaces). $100,000.

Ill., Farmer City—Defeated $24,000 bonds, sewerage sys. $91,301. CD 9/11—ENR 9/26.

Ill., Pekin—Sanitary and storm sewerage sys. $180,300. D. Reeder, city engr.

Minn., Wheaton—M. J. Fridgen, city clk., election Nov. 5, to vote on construction sewage plant. $25,000. G. M. Orr & Co., Baker Bldg., Minneapolis, engr.

Mont., Harlem—J. S. Harvey, mayor, sewerage sys. $30,000. Petitions now being signed asking election to be set to vote on bond issue.

N. J., Long Branch—Seventh Ave. sanitary sewer branches, manholes. $75,723. WPA. W. D. Cougle, 1102 S. Broad St., Trenton, WPA and owner's engr.

N. J., Trenton—Hamilton Twp., Greenwood Ave., excavating, vitr. tile sanitary sewers. $55,038. WPA. W. D. Cougle, 1102 S. Broad St., Trenton, WPA and owner's engr.

N. Y., Brooklyn—President Brooklyn Boro, 21 Boro Hall, reconstructing sewers, Jerolemon St. and 11 other locations. $129,288. WPA. W. W. Johnston, 70 Columbus Ave., New York, dir. Div. Operations.

N. Y., Brooklyn—President Brooklyn Boro, 21 Boro Hall, replacement sewers Bushwick and Stuyvesant Sects. $151,500. WPA. W. W. Johnston, 70 Columbus Ave., New York, dir. Div. Operations.

N. Y., Brooklyn—President Brooklyn Boro, 21 Boro Hall, replacing cement sewer, Brownsville and Stuyvesant Sects. $151,500. WPA. W. W. Johnston, 70 Columbus Ave., New York, dir. Div. Operations.

N. Y., Brooklyn—President Brooklyn Boro, 21 Boro Hall, sewers. $185,650. WPA. W. W. Johnston, 70 Columbus Ave., New York, dir. Div. Operations.

N. Y., Brooklyn—President Brooklyn Boro, 21 Boro Hall, replacing 9 in. cement with 12 in. vitr. sewer, Bath Beach Sect. $231,100. WPA. W. W. Johnston, 70 Columbus Ave., New York, dir. Div. Operations.